

CLIMATE NEWS

From Sheldon Whitehouse, Barbara Boxer, and Jeff Merkley

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Crabs Enlarged by Carbon Pollution, May Upset Chesapeake's Balance



Crabs are bulking up on carbon dioxide (CO_2) in the oceans. This is a major problem for the Chesapeake Bay, because CO_2 makes the ocean too acidic for oyster shell development. "Higher levels of carbon in the ocean are causing oysters to grow slower, and their predators—such as blue crabs—to grow faster," said Justin Baker Ries, a marine geologist at the UNC Aquarium Research Center. Over the next 75 to 100 years, ocean acidification could supersize blue crabs, which may eat more oysters and disrupt the food chain of the nation's largest estuary. Lobsters and shrimp along the Atlantic coast are also bulking up on CO_2 , while the corals that protect smaller organisms from predators are being harmed by higher ocean acidity. Chesapeake oyster populations have already been reduced by disease and overfishing. Oysters play a critical role in cleaning the polluted bay, which is why Virginia and Maryland recently launched all-out offensives to protect them. "One hundred years ago, the bay was crystal-clear because they filtered it every three weeks, as opposed to every three years today," Ries said. As for crab lovers, bigger isn't necessarily better. Carbon-absorbing crabs put energy into upgrading shells, not flesh, so diners years from now may crack open huge crabs and find little meat. (WaPo)

Atmospheric CO_2 Levels Could Pass 400 ppm by Mid-May

For hundreds of thousands of years before the Industrial Revolution, atmospheric carbon dioxide (CO_2) levels did not exceed 280 parts per million (ppm). By mid-May, CO_2 measurements at Hawaii's Mauna Loa Observatory are poised to pass 400 ppm. Earth last reached 400 ppm between 3 and 5 million years ago, during the Pliocene era. While today's CO_2 levels are comparable to the Pliocene, what doesn't compare is the speed at which 400 ppm is being surpassed, said geologist Richard Norris of Scripps Institution of Oceanography, UCSD. Millions of years ago, a 10 ppm increase might have taken at least 1,000 years. Now the planet is poised to reach 1,000 ppm in only 100 years if emissions levels follow current trajectories. "Our grandchildren will inhabit a radically altered planet, as the ocean gradually warms up in response to the buildup of heat-trapping gases," said Scripps geoscientist Jeff Severinghaus. Scripps launched a Twitter account (@keeling_curve) with daily updates so the public can track the path to 400 ppm, and beyond. (SIO-UCSD/NYT)

Northeast Coastal Ocean Temperatures Highest in 150 Years

According to NOAA researchers, Northeast coastal waters were warmer in 2012 than they have been at any time since the Civil War. NOAA has shipboard measurements of sea surface temperatures that date back to 1854. Last year, the region known as the Northeast Shelf Ecosystem (NSE) reached a record high of 14°C (57.2°F). Over the past three decades, the average NSE sea surface temperature has typically been lower than 12.4°C (54.3°F). Officials and scientists in Maine have suggested higher temperatures as a factor in bacterial outbreaks in bivalves (i.e. mussels and scallops) and sea lice infestations. Some partially blame warmer waters for a northeasterly shift of cod into colder waters, declining shrimp catches, and last summer's glut of soft-shell lobsters. NOAA says temperature changes also appear to have caused black sea bass, summer flounder, longfin squid, and butterfish to shift to the northeast. Over the past 40 years, roughly half of the 36 fish stocks studied by NOAA's Northeast Fisheries Science Center have shifted northward. (Bangor Daily News)

Climate Zones Will Shift Faster as the World Warms

Plants, animals, and agricultural systems have adapted to thrive in certain climates, and as the globe warms, those climates will shift. This link was established by previous research, but a new study published in *Nature Climate Change* has found that these shifts will happen increasingly faster as the globe becomes hotter, which will disrupt ecosystems and raise the risk of species extinction. The faster the pace of that shift, the less time species will have to adjust, said lead author Irina Mahlstein, a climate scientist at CU Boulder. Researchers used data from 13 climate models, running them from 1900 to 2098 and tracking climate zones changes. The analysis shows that if the globe warms 2°C , 5 percent of the land on the Earth shifts to a new climate zone. But if it warms 2°C more, 10 percent of the land area experiences a climate shift. The study also found that, in lower latitudes like the subtropics, mountainous areas are the most vulnerable to climate zone shifts caused by warming. Coffee and cacao could be early victims, as these are two of the more significant crops grown in these mountainous tropical regions. (ClimateWire/nclimate1876) 